

WHAT A WEATHER OBSERVER SHOULD KNOW.

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What must one know in order to become an observer in the United States Weather Bureau is a question that perhaps every man in this service has been called upon to answer times without number and if this article will give an adequate reply to the query, the writer will feel that his labor has not been thrown away.

The Civil Service Commission will also answer the question from their standpoint and tell the would-be weather prophet that in addition to a fair knowledge of the three "R's" he must know something of physics, geography, history, etc., and a great deal of meteorology, in order to secure their diploma of eligibility, but they can not tell, if their graduate is fortunate enough to receive his appointment, whether or not he will be a success.

A Weather Bureau man serving on station, whether he ranks as local forecast official, section director, observer, or revels in the three combined, to be a credit to the service, must be a man of education and training, and in addition to being, like Benjamin Franklin, a "philosopher, philanthropist and printer," should be a statistician, a geologist and a farmer; he must be able to prophesy of weather events to come and keep an accurate and comprehensive record of those past. He should be an electrician too; and an astronomer, unaided by any stargazing paraphernalia with which to sweep the heavens for lost comets.

That a weather observer should be a philosopher is almost too evident to discuss, as the science he represents is based on natural laws, many of which yet remain to be discovered, and the Weather Bureau of to-day with its remarkable achievements would not be in existence had not thinking men turned into account their knowledge of physics and applied it to the various atmospheric changes, until now the art of observing, forecasting, and tabulating weather conditions follows in importance close on the heels of the science from which it sprung.

It would not seem that philanthropy could enter into an occupation where cold-blooded calculations, facts and figures, play so important a part, but it should be remembered that an observer is at all times ready to brave every climate for the benefit of mankind and science; that his stations are scattered from the edge of the arctic circle in Alaska to the tropical jungles of South America; that he should be equally competent to foretell a change of weather to the weary gold seeker on the Yukon, herald an approaching cold wave from his bleak post in the far Northwest, or recognize the incipient symptoms of a West India hurricane as it coils for a spring at our commerce in southern waters.

Although a printer is furnished to Weather Bureau stations whose publications are printed, yet there will often arise occasions when a knowledge of type setting would greatly increase the value of an observer and prevent many a temporary break in the records of his station.

Statistics play no small part in a weather observer's work, and in order to compile useful data from which to deduce important facts in the future, it is obvious that much depends upon records being intelligently as well as accurately kept. It is a popular belief among some that one day is the exact counterpart of some other; that back in some period of the world's history the atmosphere varied in pressure, the temperature rose and fell, the winds backed and veered and the clouds formed, changed their shape and melted away, each in their turn, with unvarying regularity, again and again, to be repeated in regular cycles as the unceasing mill of time grinds out the years. While many facts tend to prove the fallacy of this theory, climatic records do not yet extend far enough back to positively controvert it, and it rests with the weather observer in the future, with his accumulated data of centuries, to establish the truth.

REV—3

The relation between climates and crops is so close that a knowledge of the latter is indispensable to the proper performance of an observer's duties, and he should also be geologist enough to study the soil in his State or Territory with a view to determine its special adaptability to the various products. The success of the pioneer, the enjoyment of the tourist, and the recovery of the health seeker depend not only upon the climate of a place but upon its productions as well. The up-to-date farmer is no longer a creature of mere brawn and muscle; he relies as much upon the science of his occupation for success as he does upon the sweat of his brow, and the official who represents the Climate and Crop Service of the Weather Bureau should be alive to all his needs and an unfailing source for any information he may require.

Many of the most important records of the Weather Bureau are now made by self-registering machines which do their work with the aid of electric contacts, and while it is not necessary to be an Edison or a Tesla in order to understand the few principles of electricity involved, an observer should, at least, be master enough of the science of this subtle fluid to account for and remedy any defects in the workings of his instruments.

While a knowledge of astronomy was mentioned as one of the requirements of a weather observer, it must not be supposed that this science is used in connection with meteorology in forecasting the weather, or that an observer should be able to chart the constellations of the heavens, figure out the time for the next transit of Venus, or measure the parallax of Sirius. There are times, however, when a knowledge of some of its elements is imperative, for he should know how to use those imaginary points and circles in the celestial sphere in order to intelligently describe any phenomena that might have a bearing upon his work. There is the aurora to be described in all its details, from the first arch of dawn-like light until it bursts forth in all its variegated splendor; there are halos of endless variety, both of sun and moon, to be noted; there are myriads of meteors that wander from their orbits among the stars and shoot into our atmosphere, leaving a fleeting but luminous track which the quick eye of the observer should measure; and there are many other wonderful things constantly occurring, among and above the clouds, a record of which would make useful data for future investigation.

There have been many marked improvements made in the Weather Bureau during its comparatively short existence; its methods are more scientific, its aims are broader, its results more satisfactory; and, in proportion to its progress, its need for intelligent observers is becoming more urgent. It is the dream of the Chief of the Weather Bureau to some day strike the keynote to absolute accuracy in weather forecasting, and all his subordinates should indulge in the same hope and work for the same conclusion. To this end, no stone that could hide the precious secret should be left unturned, no experiment, however simple, be untried, and no theory be untested.

OBSERVATIONS AT HONOLULU.

Through the kind cooperation of Mr. Curtis J. Lyons, Meteorologist to the Government Survey, the monthly report of meteorological conditions at Honolulu is now made nearly in accordance with the new form, No. 1040, and the arrangement of the columns, therefore, differs from those previously published.

Meteorological observations at Honolulu.

NOVEMBER, 1898.

The station is at 21° 18' N., 157° 50' W.; altitude 50 feet.
Pressure is corrected for temperature and reduced to sea level, and the gravity correction, —0.06, has been applied.
The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the